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Canada Centre for Mineral and Energy Technology

Centre canadien de la technologie des minéraux et de l'énergie

Mining Research Laboratories

Laboratoires de recherche minière

Canada

7 pp

PROPOSAL FOR WETTING ORE STANDING IN STOPES

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MRL 87–152 (IR)

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MICROMEDIA

Proposal for Wetting Ore Standing in Stopes

G. Knight*

ABSTRACT

This proposal considers the problem of wetting ore standing in a stope prior to loading through a drawpoint. Means of adding water in controlled quantities are proposed.

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KEYWORDS: Dust control, Wetting standing ore, Drawpoint loading

Proposition pour mouiller le minerai dans les chantiers

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RÉSUMÉ

Cette proposition porte sur le mouillage du minerai dans les chantiers avant le soutirage. On propose des moyens pour introduire des quantités contrôlées d'eau.

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MOTS CLES: dépoussiérage, mouillage du minerai,
chargement au point de soutirage

BACKGROUND

The major dust control factor in loading ore from drawpoints under stopes is adequate wetting of the broken ore prior to handling. As some of the ore is only in the drawpoint for a short time prior to loading it is often not fully wetted. Experiments have shown that a pile of broken ore may take several hours to wet fully(1,2). The mixing that occurs in loading may improve spreading of the water a little. It does, however, appear probable that the normal wetting with sprays at drawpoints achieves less than half of the full potential dust suppression. This proposal suggests means of applying water to the ore standing in stopes a long period, many days, prior to loading.

In any such experiment precautions must be taken to prevent applying excessive quantities of water which could lead to an outrush of water and fine rock thus creating a major safety hazard.

RESEARCH OBJECTIVES

The specific objective of this study is the reduction of airborne dust dispersed in loading ore at drawpoints under stopes. It would also lead to less dispersion in later stages in transportation out of the mine.

TECHNICAL APPROACH

The technical approach suggested is to apply water to the top of the standing ore in the stope using an atomising spray at a low water flow rate. The objective of the atomisation and low flow rate is facilitate the spread of water over the rock surfaces rather than chanelling straight to the bottom. It is expected that water flow rates should be set to give application times of one or more days. The total quantity of water applied should be metered and controlled. The experiments should be started with a small quantity, about 2 litres per tonne of ore blasted at one time. The ore reaching the drawpoint should be observed at least daily. Precautions should be taken that the observer is not caught in an outrush. Dust measurements should be made at intervals before, during and after the wetted ore reaches the drawpoint and records kept of tonnage withdrawn and remaining in the stope. Probably best results will be obtained if dust samples before and after the drawpoint are taken and the dust production per tonne of ore loaded is calculated(1). If successful, the experiments should be extended until the full stope is wetted and a technique suitable for wetting after each blast is developed.

Water stemming could add up to one litre of water per tonne of ore. This is about one tenth of the quantity required for full wetting and dust control. It could, however, prove useful in reducing the dust dispersion.

ANTICIPATED BENEFITS

A substantial reduction in dust dispersion during loading can be expected.

ESTIMATED COSTS

1. Capital equipment	$ 2 000
2. Supplies	2 000
3. Personnel—It is estimated the project will have a one year duration	
a. Project engineer– part time at $40 000/year	4 000
b. Technician– part time at $30 000/year	6 000
4. Technical support— 1 or 2 visits by CANMET/MRL personnel	2 000
The total cost of this project is estimated to be	$ 16 000

WORK PLAN

The project, as described, will require approximately 1 year for completion. If approved, it is proposed that the work should proceed as outlined earlier. The detailed order of the tests should be modifiable according to the results achieved and the availability of resources. If successful it is expected that this study will be followed by other studies to assimilate it into the mining operation.

TECHNOLOGY TRANSFER

The results will be published and made available to the Canadian mining industry.

REFERENCES

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